



**U. S. Steel Košice, s.r.o.**  
A Subsidiary of United States Steel

# ENVIRONMENT REPORT 2005



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*Our permanent goal is to reduce burden on the environment and thereby improve it not only for our employees but also for the entire East Slovak region.*





## President's address

*Dear friends,*

*You are receiving third volume of the U. S. Steel Košice, s.r.o. Environmental Report. The publication is aimed first of all to provide professional and public with basic information on environmental conditions and protection at one of the largest industrial companies in the Slovak Republic.*

*Environmental protection belongs to fundamental business drivers at all plants of United States Steel, whether located in USA or Europe. It is not a question of fashion. United States Steel has been acting as a responsible corporate citizen and partner on a long-term basis.*

*The same applies to U. S. Steel Košice, that has spent more than USD 180 million on projects related to protection of air, water and waste management improvement. We fulfill our commitment in a responsible manner - to invest sum USD 700 million to upgrade of production facilities and environmental systems within 10-year period and bring products to our customers that meet both quality and environmental requirements and standards.*

*Continued efforts in environmental improvement resulted in Prize of Minister of Environment SR, awarded to our company in year 2004 for permanent contribution to environmental care in area of performance.*

*In the future, we intend to reach status when environmental protection becomes not only a basic company but personal value of all our employees. Employee Environmental Education training program CITE represents a form of active approach to increase employee environmental awareness. We go farther, supporting development of positive relation to environmental protection and improvement among students of elementary, secondary and high schools in the form of ecological projects.*

*Company U. S. Steel Košice, the largest metallurgy company in Slovakia, contributes to permanently sustainable development of Eastern-Slovak region through many activities and tools. On the following pages, you can see what we have achieved in area of environmental protection.*

David H. LOHR  
President



# Environmental policy

U. S. Steel Košice, s.r.o. is the largest fully - integrated producer of flat rolled products in Central Europe. The company produces a wide range of products: hot and cold rolled coils, sheets and strips, galvanized sheets, prepainted sheets and tinplates, electrical steel sheets, pipes and radiators. The products are supplied to a wide range of markets and to various industries.

We are fully aware of our responsibility related to the protection and enhancement of the environment, the quality of which directly or indirectly affects the quality of life of people in the present day and of future generations as well. In accordance with company strategic intentions and in terms of continuous improvement of all activities within our integrated management system we are obliged to:

**1. Maintain and develop EMS based on the ISO 14001:2004 standard requirements related to environmental law regulations valid in SR and other environmental requirements accepted by USSK.**

**2. Minimize adverse impacts of production activities, products and services on the environment and the working environment by active prevention and continuous improvement of processes.**

**3. Take into account environmental aspects in purchasing input materials, utilities and services, as well as in implementing new processes and technologies.**

**4. Increase the environmental awareness of all our employees.**

With regard to this, all internal and external employees working within the USSK area are obliged by Company Management to fulfill the above-mentioned intentions, and Company Management also expects their full commitment to our corporate values.

Košice, June 2005



David H. LOHR  
President  
U. S. Steel Košice, s.r.o.



# E M S

U. S. Steel Košice, s.r.o. (USSK) has long-term experience with building and development of Environmental Management System (EMS) compliant with EN ISO 14001. The experiences are used both within the company and at development of its subsidiaries and external companies in the Košice region and the entire Slovakia. EMS was implemented at USSK, in all of its 13 divisions. In November 2003, the company was awarded with EMS certificate by international inspection organization RWTÜV. The certificate proving conformance of implemented EMS with requirements of international standard ISO 14001 is valid within company at five finishing divisions. Other divisions are subject to inter-organization EMS certification provided by USSK internal certification place (ICM USSK).

Department Director QMS has significantly contributed to the aforementioned results, managing and coordinating process of EMS development and permanent improvement and raising the employee environmental awareness. Even higher demands laid on environmental matters can only be fulfilled through close cooperation with particular divisions and company units, mainly with department GM Environment.

ICM USSK plays an irreplaceable role in the area of EMS sustaining and development, being a unique in the terms of its mission and activities. Practice shows that ICM USSK ensures high quality of implemented management systems and of the entire certification process within performed QMS, EMS and Safety management audits through established rules and auditors professionalism (2 European EMS auditors). This resulted in compatibility, functionality and uniform level of implemented management systems. High professional level and rich experiences of employees represent a big advantage of the company to the future.





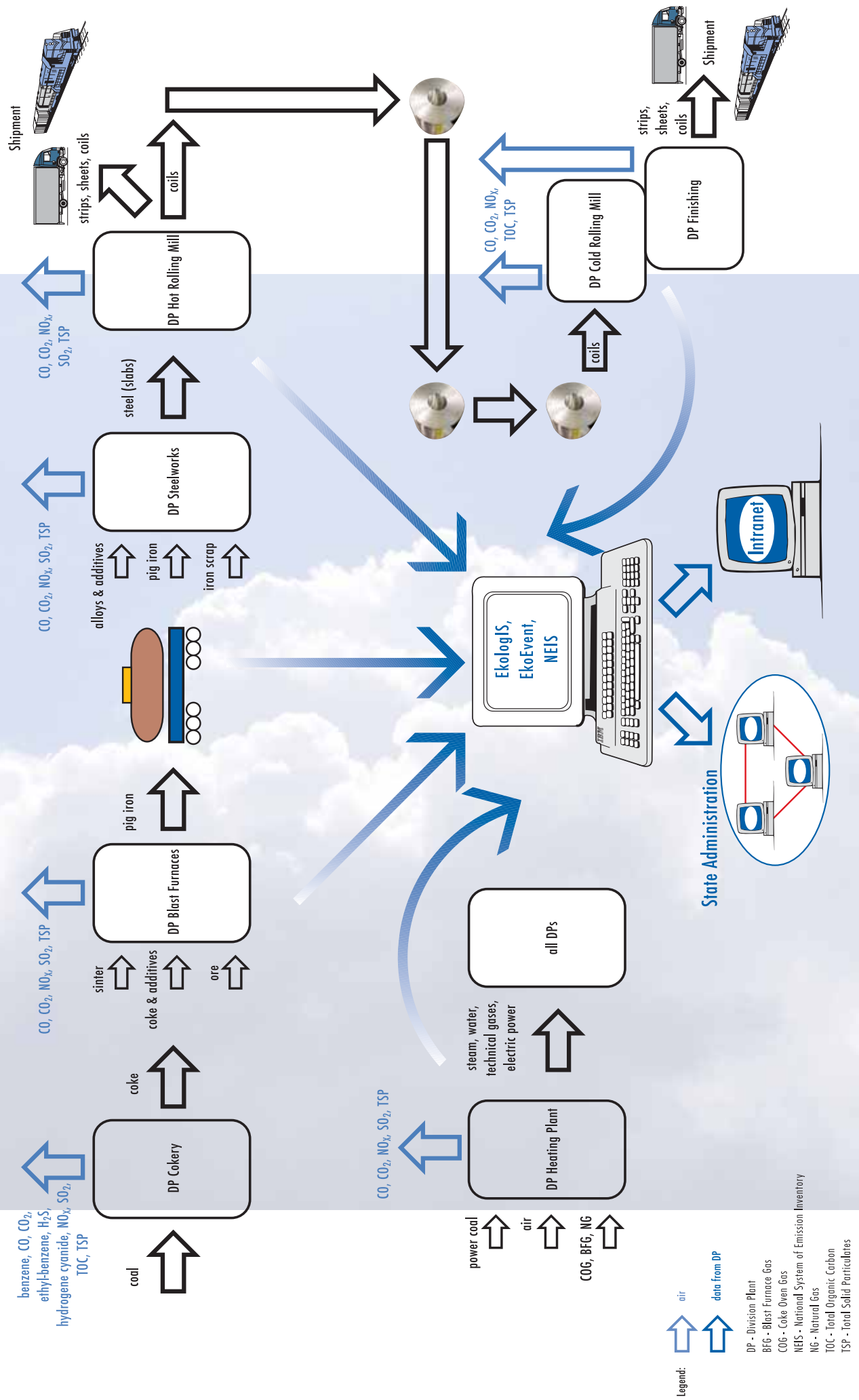
Overview of ISO 14001 compliant EMS certification

No.	Division plant	Certification organization	Primary certification	Valid until
1.	DP Cold Rolling Mill	RWTÜV	07/1997	Nov 26, 2006
2.	DP Metal. Sec. Production		04/1998	
3.	DP Hot Rolling Mill		06/1999	
4.	DP Finishing (DP Tin Mill)		12/2002	
5.	DP Shipment		10/2003	
6.	DP Steelworks	ICM USSK	05/1999	06/2005
7.	DP Transport		12/1999	03/2006
8.	DZ Mechanics		09/2001	09/2007
9.	DZ Electro		12/2002	12/2005
10.	DP Special Maintenance		03/2003	04/2006
11.	DP Power Engineering		12/2003	12/2006
<b>Developed EMS - without certification</b>				
No.	Division plant	Certification organization	Pre-certification audit	
12.	DP Cokery	ICM QE	09/1999	
13.	DP Blast Furnaces		12/1999	



# A i r p r o t e c t i o n





Legend:  
 air  
 data from DP

- DP - Division Plant
- BFG - Blast Furnace Gas
- COG - Coke Oven Gas
- NEIS - National System of Emission Inventory
- NG - Natural Gas
- TOC - Total Organic Carbon
- TSP - Total Solid Particulates



# Air protection

Air represents currently most threatening environmental area, pollution of which is constantly increasing. It is mainly caused by rapid increase of production, energy, raw material exploitation, industrial activities, transport, etc. A man breaths in approx. 15 l of air per day, i.e. relatively small amounts of harmful substances affect human organism and human's health.

Area of air protection belongs to one of the most important issues at USSK. Primary objective in this area refers to:

- Observance of existing emission limits from air pollution sources
- Meeting general operational conditions.

The following CAPEX projects were implemented in order to fulfill the aforementioned objectives:

### Compliance with existing emissions limits

**Sinter belt dedusting** - installation of independent electrostatic precipitators for each sinter belt with continuous monitoring of pollutant emissions (TSP), NO<sub>x</sub>, SO<sub>2</sub> and CO. Reduction of TSP emission by 80 %.

**Heating plant boiler K2 and K3 reconstruction** - increase of TSP entrapment efficiency through reconstruction of dedusting equipment - electrostatic precipitators to bag houses and installation of continuous pollutant monitoring systems for TSP, NO<sub>x</sub>, SO<sub>2</sub> and CO. Reduction of TSP emission by 98 %.

**Reconstruction of 12 EP at Division BF - Ore Conveyors** - the reconstruction consisted of replacement of discharge and collecting electrodes with a hammering device and flow direction adjustment in order to obtain required TSP emission limit. Reduction of TSP emission by 90 %.



Table of TSP Values (tons)

2001	2002	2003	2004
16,679.071	13,869.900	9,369.854	6,349.289

# Air protection

Comparison of TSP Production in USSK (tons)

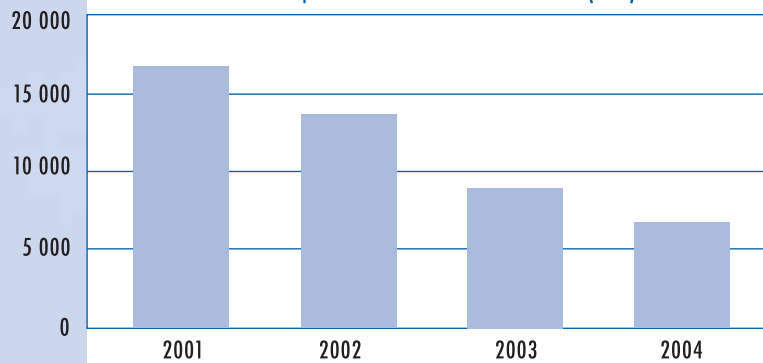
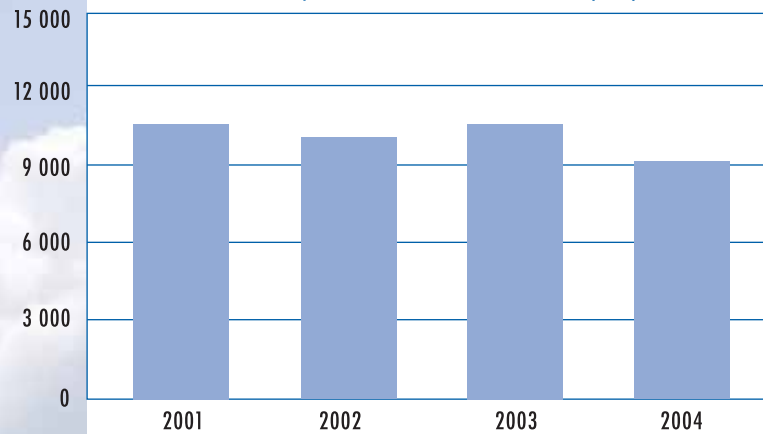


Table of NO<sub>x</sub> Values (tons)

2001	2002	2003	2004
10,268.646	9,990.073	10,178.764	9,092.772

Comparison of NO<sub>x</sub> Production in USSK (tons)



### Observance of general operation conditions

*Dry gas dedusting at coke discharge coking battery 1 and 3 - installation of independent dedusting equipment at each coking battery for purpose of coke pushing and subsequent entrapment of TSP emission in material filters. Reached emission factors refer to 10 % of determined emission limit.*



# Air protection



## **Emission-free charging of Coking battery 1 and 3**

- Reconstruction of charging cars and coke battery filling openings will ensure outlet of filling gas in main collector (coking battery 3), into mini riser (coking battery 1) and subsequently to raw coke oven gas that is cleaned (separation of particular products) at operation Chemistry, Division Coke Plant. The mentioned process results in 100% precipitation of gas pollutants from coke chamber filling process.

**Secondary dedusting of Steel Shop 2** - the investment project ensured entrapment of secondary emission generated at converter hall, Steel Shop 2 during steel production from particular emission generation points and technology stations with subsequent gas cleaning in a bag house. Reached TSP concentration refers to 5 % of determined emission limit.

**Dedusting of Steel Shop 1** - the biggest investment project in area of molten steel production and air protection through installation of new converter lines with primary converter gas cleaning at electric precipitators and installation of efficient secondary dedusting.

**BF1 cast house dedusting** - installation of casting and slag runners dedusting system at BF1 cast house that will ensure fugitive emission generated in the process of pig iron tapping in the cast house halls and subsequent improvement of work ambience. Expected TSP concentration falls below 10 mg/m<sup>3</sup>.

## **Planned investments**

**TOC liquidation** - the project is aimed to ensure cleaning of waste gas containing volatile organic substances from coating line Eisenmann and Dynamo lines at Division CRM below required emission limits.

**Observance of emission limits SO<sub>2</sub> and NO<sub>x</sub> at boilers K2 - K6**

**K6 filter reconstruction** - the project is aimed to ensure observance of determined emission limits valid from January 01, 2008.

**R&M of Gas Treatment Plant, Steel Shop 2** - the project is aimed to upgrade current low-efficient wet gas treatment plant for oxygen converters KK 4, KK 5 in order to maintain determined emission limit 50 mg/m<sup>3</sup>.

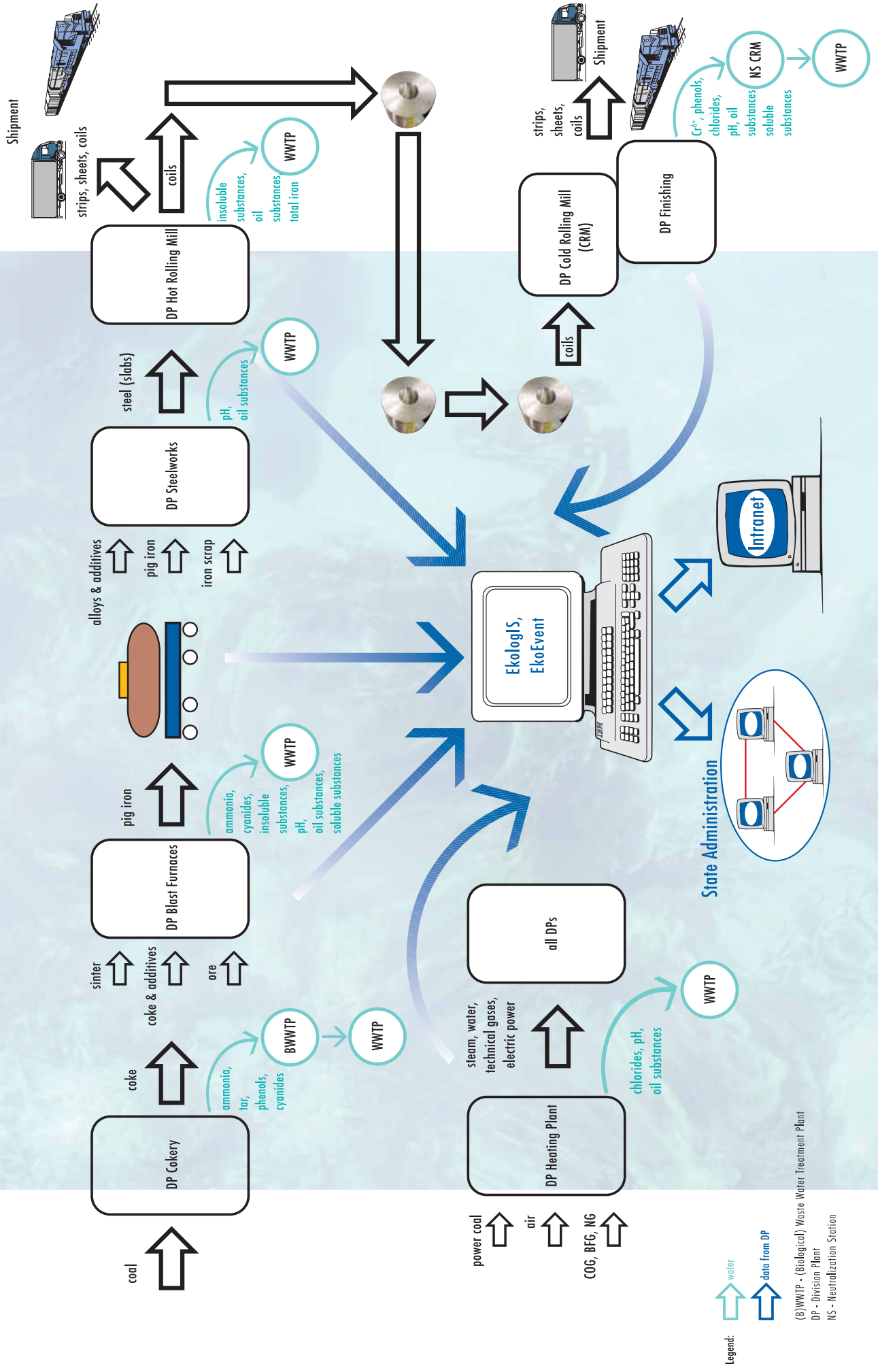






# Water protection





(B)WWTP - (Biological) Waste Water Treatment Plant  
 DP - Division Plant  
 NS - Neutralization Station

# Water protection

*In present times, almost everyone recognizes value and need of water. New technologies don't allow us to produce "artificial water" even at the beginning of 21<sup>st</sup> century, thus we have to use available sources that are not inexhaustible.*

*Water represents an inevitable part of production process at company U. S. Steel Košice mostly in the form of tap and industrial water. Industrial water supply to USSK is provided through intake of surface water from river Hornád and its subsequent treatment at Chemical Water Treatment Plant at Krásna nad Hornádom.*

*Tap water is mostly provided from the company own sources located at Gyňov-Seňa. Tap water from the mentioned source serves not only to USSK needs but as well to surrounding villages Sokolany, Gyňov, Bočiar and Haniska.*

**Company U. S. Steel Košice uses two types of water at its production process:**

- **Industrial water** - cooling of metallurgy production equipment and aggregates
- **Tap water** - hygienic purposes, dining and sanitary facilities.

*Waste water represents an irreplaceable part of technology production process, being a mixture of surface outflow water (8.8 %), sewage water (10.8 %) and industrial waste water (80.4 %). The mentioned mixture is let out to Waste Water Treatment Plant (WWTP) through uniform sewage system and treated through physical-chemical processes. Following water filtration, part of treated waste water from WWTP returns to production process as an industrial water (approx. 12 %) and remaining water is sluiced into Sokolany creek (88 %).*

*Waste water treatment at contamination sources is provided at BWWT Division Coke Plant, Neutralization Station Division CRM, NS Chemical Water Treatment Plant Heating Plants and NS KORAD Division Secondary, in order to reduce load on end WWTP at Sokolany.*

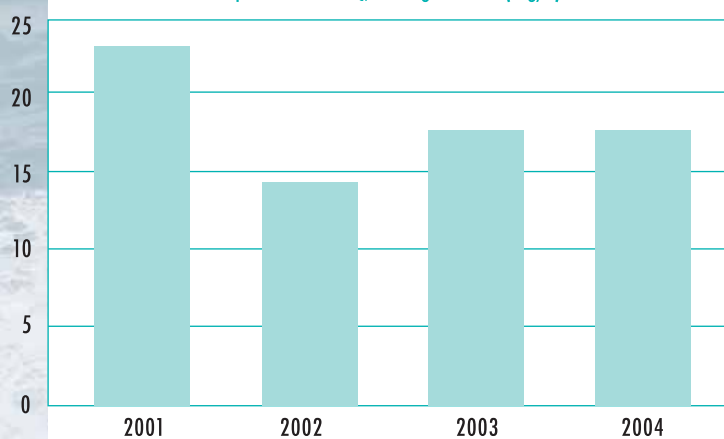


# Water protection

Table of COD<sub>Cr</sub> Values (mg/l)

2001	2002	2003	2004
23.49	14.31	17.97	17.96

Comparison of COD<sub>Cr</sub> Average Values (mg/l)



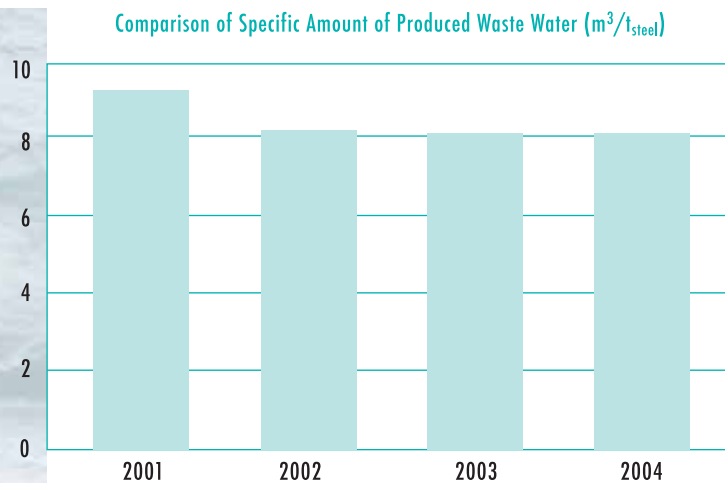
*Main USSK objectives in area of water protection:*

- Eliminate release of harmful substances into surface and underground water during production process
- Reduce contamination coefficients of waste water discharged from WWTP into Sokolany creek
- Reduce amount of waste water and increase waste water re-circulation.

Table of Specific Consumption of Waste Water (m<sup>3</sup>/t<sub>steel</sub>)

2001	2002	2003	2004
9.23	8.18	8.08	8.07

# Water protection



*Fulfillment of the above mentioned objectives is being assured through implementation of the following investment projects:*

**Treatment of entrapped water from under the Dry Heap** avoided contamination of underground water at wider territory. Treated water returns to technology process in amount approx. 30 l/sec.

**Making BF sludge emergency tanks more environment friendly** ensured protection of the tanks against leakage into the sub-ground and adverse effect of underground water quality.

**Waste water monitoring - 2<sup>nd</sup> stage** - will complete existing monitoring system by monitoring of sluiced water quality directly at largest contamination sources.

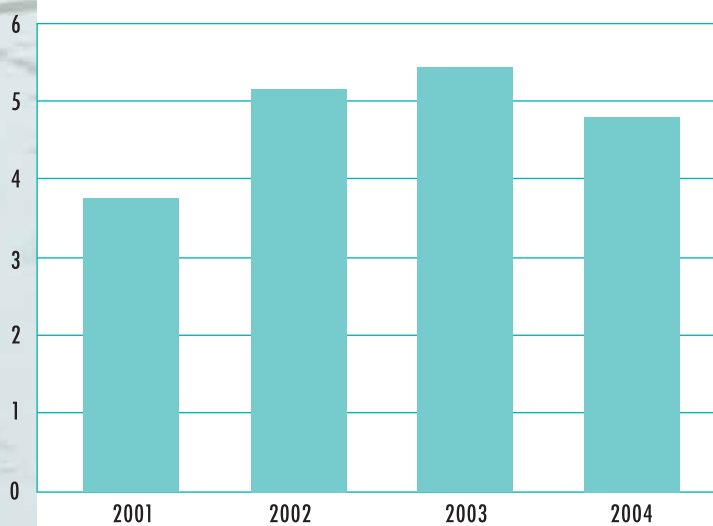
**Modernization and reconstruction of CRM Neutralization Station** - the project is aimed to ensure CRM waste water treatment prior to sluicing in USSK Sewage System according to Sewage Order.

# Water protection

Table of BOD<sub>5</sub> Values (mg/l)

2001	2002	2003	2004
3.62	5.15	5.41	4.86

Comparison of BOD<sub>5</sub> Average Values (mg/l)



*USSK development plans related to water protection in the near future will pay attention to increased ratio of treated waste water in the water management system, reduction of USSK Sewage System load and development of industrial water treatment projects.*

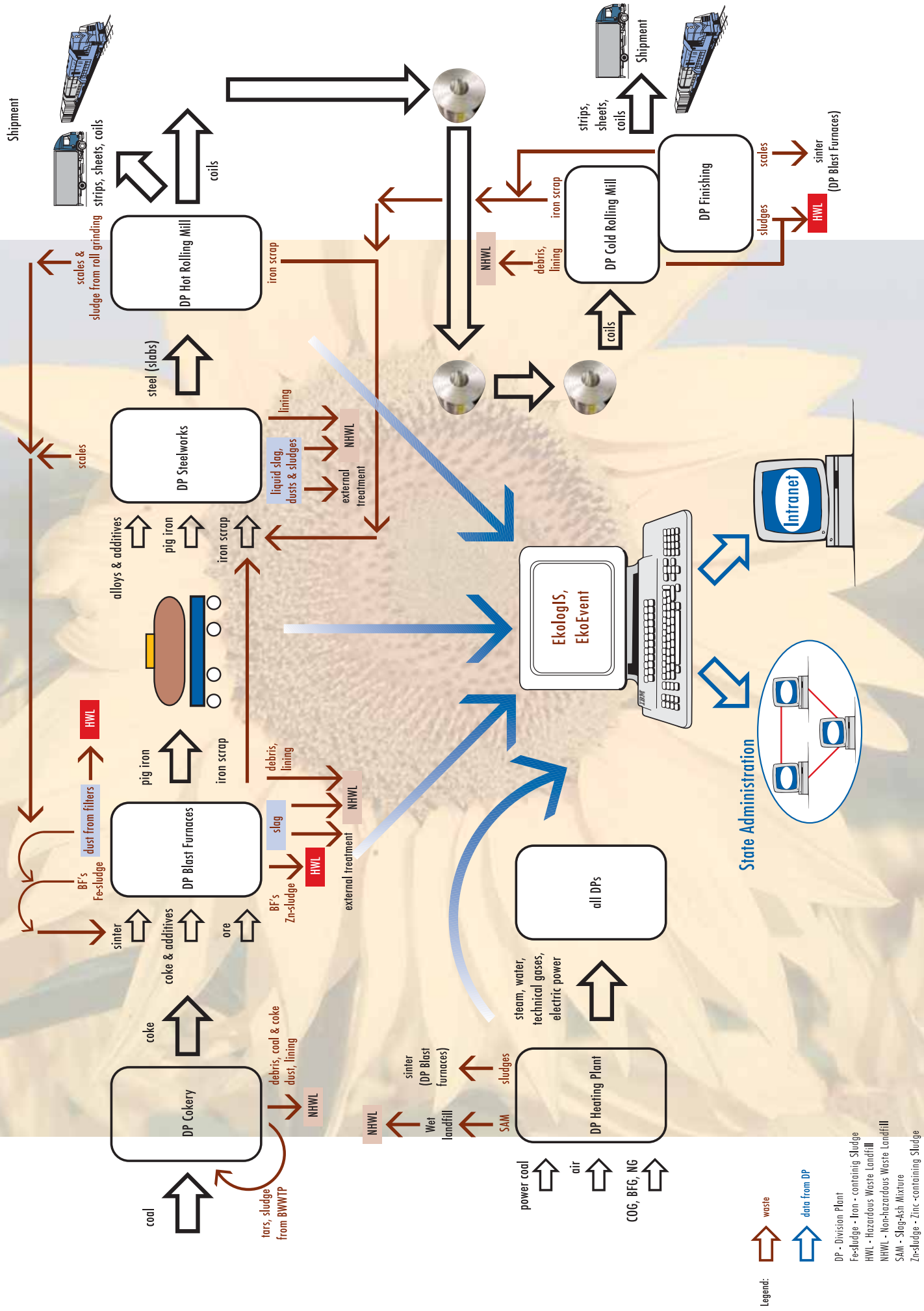






# Waste management





Legend:  
 ↑ waste  
 ↑ data from DP

DP - Division Plant  
 Fe-sludge - Iron - containing Sludge  
 HWL - Hazardous Waste Landfill  
 NHWL - Non-hazardous Waste Landfill  
 SAM - Slag-Ash Mixture  
 Zn-sludge - Zinc-containing Sludge

# Waste management

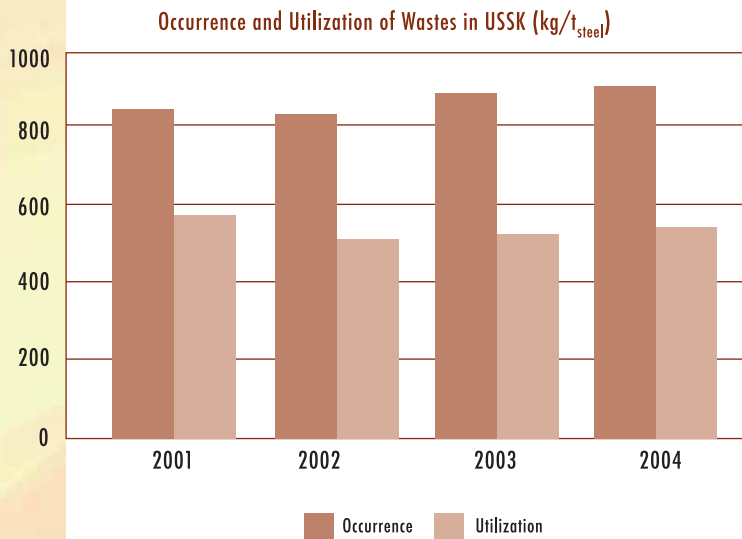
Fundamental principles of waste management concept result from strategy of sustainable development at the Planet.

USSK's efforts in area of waste, generation of which is enormous at metallurgy production, are as follows:

- Waste generation minimizing
- More effective waste recovery
- Waste re-use at production process.

During years 2001 - 2004, USSK produced approx. **870 kg** of waste/**1t** of steel per day and re-used at production or sold **540 kg** of waste/**1t** of steel.

Occurrence and Utilization of Wastes (kg/t <sub>steel</sub> )				
	2001	2002	2003	2004
Occurrence	862.5	856.6	881.2	890.4
Utilization	579.2	513.6	525.2	557.3



# Waste management

Waste recovery shows a long-term increasing trend at USSK. The positive effect resulted from the following actions adopted:

- Installation of steel waste processing technology line with pellets and briquettes as a final product that is subsequently used at USSK technology facilities
- Increased use of converter and BF slag
- Maximum possible use of iron scrap
- Implementation of waste paper separated collection.

## Waste disposal facilities:

- **Hazardous waste landfill** with capacity 410,000 m<sup>3</sup> consisting of 3 cassettes. Largest proportion of disposed of waste refers to sludge and dust generated at gas purification and solid waste generated at gas purification.
- **Non-hazardous waste landfill** with capacity 3,174,000 m<sup>3</sup> divided into 4 sections. Considering amount of waste disposed of at the landfill, metallurgy debris, slag-ash mixture and unprocessed slag represent the largest part thereof.

## Waste storage facilities:

- **Impoundment Wet Heap** serving to storage of slag-ash mixture from operations of Division Power Engineering. Capacity of the heap refers to 660,000 m<sup>3</sup>, consisting of 3 lagoons and 2 pre-lagoons.
- **Impoundment WWTP Sokolany** serving to stabilized sludge storage with capacity 560,827 m<sup>3</sup>.
- **Sludge tanks Nos. 1, 2, 3 and 4** - serving to storage of fine converter sludge with total capacity 233,032 m<sup>3</sup>.

## Waste recovery facility:

- **Steel shops scrapyards**. The facility has permit to recover 12 types of waste at category of hazardous and other waste.



# Waste management

*In area of waste management, company USSK implemented investment projects within period 2003-2004 aimed to ensure compliance of waste processing and disposal with SR and EU legislation:*

## **R&M (reconstruction & modernization) of sludge tank 3**

*The project included making of sludge tank No. 3 more environment friendly intended to storage of fine steelmaking sludge generated at converter gas treatment in entire accumulation area 47,200 m<sup>3</sup> and resulted in elimination of harmful substances release into underground water as required by valid waste management and water protection related legislation.*

## **Non-hazardous waste landfill modification**

*The waste landfill modification represented expansion of section No. 1 by section "1c" with accumulation capacity 70,100 m<sup>3</sup>, resulting in final section No. 1 with accumulation capacity 189,000 m<sup>3</sup>. The modified landfill uses existing sealing and monitoring system established within project "Making Dry Dump more environment friendly and Waste Disposal".*



# M o n i t o r i n g

Program EkologiS was implemented at USSK for the purpose of ensuring quality parameters and monitoring of particular environmental parameters within USSK territory. The program allows to obtain actual information e.g. on amount of released emission, waste water quality, amount of generated waste etc.

## Measuring car provides for:

- Emission measurement
- Measurement of total hydrocarbons (TOC)
- Measurement of humidity
- TSP measurement
- Measurement of air quality in USSK surroundings

Waste gas monitoring includes continuous monitoring of meteorology data - e.g. atmospheric temperature and humidity, wind direction and speed. Monitoring is provided alternatively in particular villages for more than 150 days per year according to approved schedule, ensuring sufficient amount of data for purpose of evaluation of USSK impact on adjacent villages and area of the City.





# M o n i t o r i n g

## Air

*Reliable information on air pollution = rational and effective measures adopted in area of air cleanliness protection.*

*Observation of metallurgy operations related air pollution is provided through emission monitoring system and NEIS (National System of Emission Inventory Control), allowing provision of information in an electronic form regarding emission limit observance, emission measurement, observance of emission measurement and amount of released pollutants and on related charges to be paid.*



*Amount and size of dust gradient around USSK is permanently monitored at 35 steady measurement stands installed in cadastre territory of villages (Pořov, Šaca, Šebastovce, Velká Ida, Cestice, Čečejevce, Komárovce, Buzica, Rešica, Vyšný and Nižný Lánec, Perín -Chym, Seňa, Haniska, Hutníky, Sokolany, Belža and Valaliky). Monitoring of dust gradient deposit around USSK is aimed to assess dust diffusion and grade in a long-term horizon, caused by TSP emission released in the air by production and technology facilities.*

# M o n i t o r i n g

## Water

Waste water quality monitoring is provided in compliance with the company Sewage Order at total 52 intake points located so as they can include all major operations that significantly affect water quality within uniform sewage system. Sampling and sample evaluation is provided by Physical - Chemical Laboratory and measurement team established at department GM Environment.

Sample analysis results are processed by information system EkologiS accessible by all competent employees of divisions and the company Top Management.



Implementation of continuous control through establishment of automatic sampling and sample quality evaluation directly in the most important sewage inspection chambers is prepared in order to improve quality and speed up obtaining of real-time exact data about waste water quality.

# M o n i t o r i n g

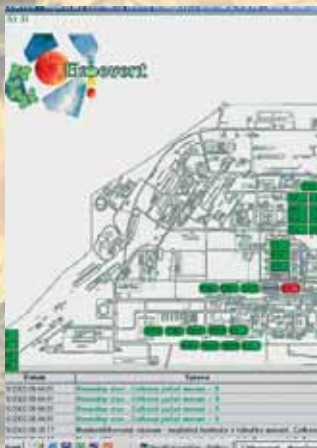
## Waste

Requirement of human health protection and environmental protection at waste handling is met through regular production process internal audits. Company USSK has worked out legal regulations as well as obligations of waste originator and keeper in the form of internal directives and standards. Audit activity prevents from possible adverse environmental effects.

Composition analysis of waste generated at USSK companies is made on annual plan basis and is related to waste disposed of at USSK waste landfill,



for external suppliers for purpose of disposal or re-use, based on specific requirements.



# M o n i t o r i n g

## Forest

Care of forests around company USSK includes forest condition monitoring. Continuous measurement of sulfur oxides and solid pollutants gradient is provided at 10 stands. In compliance with Forest Management Plan, department GM Environment controls recovery of forest greens through determined wood planting; manages other work related to planting activities and cares of complex image of protective forest..

Recent experience and facts obtained through air cleanliness and forest health condition monitoring allow us to assess environmental protection processes.



In the term of country and nature protection, the company continued to fulfill provisions of Act on Country and Nature Protection as well as Forest Management Plan. Total acreage of forestry lands and other afforested area owned by USSK represents 781,461 m<sup>2</sup>.

Approx. 66,820 new trees were planted during years 2001 - 2004 as part of the Forestation Plan.



# Integrated prevention & pollution control

## IPPC

*In its production programs, company U. S. Steel Košice emphasizes environmental aspects and adapts operation of its major production aggregates to this objective. It has been proved with completion of complicated project of sinter belt dedusting and ongoing projects of primary and secondary dedusting of Steel Shops. Integrated Prevention and Pollution Control Act created a frame for integrated approach to environmental protection. Representatives of company U. S. Steel Košice dealing with the aforesaid subject matter evaluate all operations on possible transfer of contamination from one environmental area to the other and prepare necessary material to be attached to complex application for issuance of integrated permit. With regard to Hazardous waste landfill U. S. Steel being classified as a new operation according to law, the application was filed in on Oct 31, 2003 and integrated permit was issued on May 28, 2004.*

*Following changed capacity of section No. 1 and 4, a new application was filed on Aug 04, 2004. Changed integrated permit was issued on Jan 17, 2005. As for other operations USSK, a schedule was prepared together with SIŽP for particular stages of application filing until the end 2006. According to the schedule, application for integrated permit to be issued to Division HRM was filed on Apr 30, 2004, on Aug 26, 2004 for Sintering Plant, on Nov 29, 2004 for Pickling Lines, Recovery Station and CRM Rolling Track, on Jan 25, 2005 for Dynamo Lines and on Apr 30, 2005 for Steel Shop II.*

*As to date, company U. S. Steel Košice obtained two integrated permits and another 4 integrated permit issuance is in progress. Information on annual air pollution and water contamination at operations being subject to IPPC Act is sent to SHMU on annual basis. Relations between operator and permitting authority has been improved since implementation of IPPC Act and largely contribute to environmental awareness and correct attitude to environmental matters.*



## Other ecological activities

Company U. S. Steel Košice fully recognizes its responsibility for environmental development and protection, since environmental quality directly or indirectly affects quality of current and future generation life.

### Public relations

Environmental matters affect all of us and we all have right to gain most information thereon. Therefore, company USSK is a general partner of festival Ekotop Film for the fourth time in order. The festival is aimed to provide actual information to the wide public through film projections and professional seminars dealing with human industrial, economical and other activities, with emphasize on environmental protection and permanently sustainable development in Slovakia and worldwide.

Environmental competition initiated by USSK in year 2004 at elementary schools in Košice and surroundings is associated with air, water and nature protection, waste sorting and collection. Competition called **"Where and how will we live"** is aimed to support positive attitude of students to environment and required environmental protection. The competition will continue in the following years as well.

Company USSK pays big attention to area of communication with public authorities, surrounding villages, non-governmental organizations and wide public on environmental protection. This activity is provided for by department GM Environment.

Pursuant to Act No.211/2000 on Free Information Access, company USSK established a website at its Internet and Intranet, dealing with environmental protection, providing information to the company employees and the wide public on status and activities related to particular environmental aspects at USSK.





## Other ecological activities

### Employee education

*In January 2004, company USSK began to implement new educational program CITE intended to all the company employees. In practice, CITE means continuous or permanent environmental improvement. It is an educational program consisting of three levels, having a few goals:*

- *Increase of employee knowledge on environmental protection regulations*
- *Assist USSK employees at meeting environmental strategy and standard requirements in area of the company environmental protection*
- *Broaden USSK employees' knowledge on mutual metallurgy processes at USSK*
- *Teach USSK employees to follow job practices resulting in continuous environmental improvement*
- *Last but not least, increase environmental awareness of all the company employees.*





*If air pollution; soil, water, river and ocean contamination continues as well as devastation of our biological nature, it will have very adverse effect on all future generations. Immediate increase of environmental awareness at all inhabitants of the Earth represents the key to success, a method how to avoid such adverse effects...*

*BUTRUS BUTRUS-GHALÍ*





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